What is Claimed is:

1. A genetically modified astrocyte for gene therapy, said genetically modified astrocyte comprising:

one or more DNA sequences selected from the group consisting of DNA encoding a selectable marker, DNA encoding a poison pill, and DNA encoding a molecule useful for gene therapy; and

suitable regulatory elements for controlling expression of said one or more DNA sequences.

2. The genetically modified astrocyte of claim 1 wherein said selectable marker comprises neomycin resistance.

3. The genetically modified astrocyte of claim 1 wherein said selectable marker comprises methotrexate resistance.

4. The genetically modified astrocyte of claim 1 wherein said poison pill comprises herpes virus thymidine kinase.

5. The genetically modified astrocyte of claim 1 wherein expression of said DNA encoding said molecule useful for gene therapy results in the production of a protein.

6. The genetically modified astrocyte of claim 1 wherein expression of said DNA encoding said molecule useful for gene therapy results in the production of anti-sense RNA.

7. The genetically modified astrocyte of claim 1 wherein expression of said DNA encoding said molecule useful for gene therapy results in the production of a ribozyme.

8. The genetically modified astrocyte of claim 5 wherein said protein comprises a growth factor.

9. The genetically modified astrocyte of claim 8 wherein said growth factor comprises a cytokine.

10. The genetically modified astrocyte of claim 5 wherein said protein comprises tyrosine hydroxylase.

11. The genetically modified astrocyte of claim 1 wherein said suitable regulatory elements include a regulatable promoter.

12. The genetically modified astrocyte of claim 11 wherein said regulatable promoter comprises an inducible promoter.

13. The genetically modified astrocyte of claim 12 wherein said inducible promoter comprises a human preproenkephalin promoter.

14. The genetically modified astrocyte of claim 11 wherein said regulatable promoter comprises a constitutive promoter.

15. The genetically modified astrocyte of claim 1 wherein said suitable regulatory elements include an astrocyte-specific promoter.

16. The genetically modified astrocyte of claim 15 wherein said astrocyte-specific promoter comprises a promoter for glial fibrillary acidic protein.

17. An astrocyte cell line comprising the genetically modified astrocyte of claim 1.

18. A plasmid for transfection of astrocytes which plasmid comprises DNA encoding a molecule useful for gene therapy and suitable regulatory elements for controlling expression of said molecule useful for gene therapy.

19. A plasmid for transfection of astrocytes which plasmid comprises DNA encoding a selectable marker and suitable regulatory elements for controlling expression of said selectable marker.

20. The plasmid of claim 19 further comprising DNA encoding a poison pill and further suitable regulatory elements for controlling expression of said poison pill.

21. A plasmid for transfection of astrocytes which plasmid comprises DNA encoding a poison pill and suitable regulatory elements for controlling expression of said poison pill.

22. An astrocyte stably transfected with one or more plasmids, said one or more plasmids selected from the group consisting of:

a plasmid comprising DNA encoding a molecule useful for gene therapy and suitable regulatory elements for controlling expression of said molecule useful for gene therapy;

a plasmid comprising DNA encoding a selectable marker and suitable regulatory elements for controlling expression of said selectable marker;

a plasmid comprising DNA encoding a selectable marker and suitable regulatory elements for controlling expression of said selectable marker, and further comprising DNA encoding a poison pill and further suitable regulatory elements for controlling expression of said poison pill; and

a plasmid comprising DNA encoding a poison pill and suitable regulatory elements for controlling expression of said poison pill.

23. A method of stably transfecting primary cells, said method comprising stably transfecting said primary cells using non-viral transfection methods.

24. The method of claim 23 wherein said non-viral transfection method comprises chemical transfection.

25. The method of claim 24 wherein said chemical transfection comprises stable calcium phosphate transfection.

26. The method of claim 23 wherein said non-viral transfections method comprises electroporation.

27. The method of claim 23 wherein said primary cells comprise astrocytes.

28. A method for gene therapy in the central nervous system of a subject which method comprises:

genetically modifying primary cells to include DNA encoding a molecule useful for gene therapy in the central nervous system;

transplanting said genetically modified primary cells into the central nervous system of a subject; and

expressing said DNA encoding said molecule, thereby producing said molecule for gene therapy in the central nervous system of the subject.

29. The method of claim 28 wherein said primary cells comprise astrocytes.

30. The method of claim 29 wherein said astrocytes are genetically modified by a non-viral transfection method.

31. The method of claim 30 wherein said non-viral transfection method comprises chemical transfection.

32. The method of claim 31 wherein said chemical transfection comprises stable calcium phosphate transfection.

33. The method of claim 28 wherein said expression of said DNA is controlled by a regulatable promoter.

34. The method of claim 33 wherein said regulatable promoter is controlled pharmacologically.

35. The method of claim 34 wherein said pharmacologic control comprises utilizing dopaminergic pathways.

36. The method of claim 33 wherein said regulatable promoter comprises an inducible promoter.

37. The method of claim 33 wherein said regulatable promoter comprises a constitutive promoter.

38. A method of maintaining and growing astrocytes in culture, said method comprising:

growing first astrocytes with a liquid medium overlying said first astrocytes so as to condition said liquid medium;

removing said conditioned liquid medium; and

placing said removed conditioned liquid medium over second astrocytes, said removed conditioned liquid medium capable of maintaining and growing said second astrocytes in culture.

39. A method of selecting for astrocytes in a mixed cell population, said method comprising:

stably transfecting a mixed cell population with an astrocyte-specific plasmid, said astrocyte-specific plasmid comprising DNA encoding a selectable marker and suitable regulatory elements for controlling expression of said selectable marker;

growing said transfected mixed cell population under selective conditions, wherein said astrocyte-specific promoter functions only in transfected astrocytes present in said transfected mixed cell population, such that only transfected astrocytes present in said transfected mixed cell population can be selected under said selective conditions using said selectable marker under control of said astrocyte-specific promoter; and

selecting said astrocytes from said mixed cell population.

40. The method of claim 39 wherein said astrocyte-specific promoter comprises a promoter for glial fibrillary acidic protein.

41. The method of claim 39 wherein said selective marker comprises neomycin resistance.

42. The method of claim 39 wherein said selective marker comprises methotrexate resistance.

43. The method of claim 41 wherein said selective conditions include exposing said transfected mixed cell population to a neomycin analogue.

44. The method of claim 43 wherein said neomycin analogue comprises G418.

45. The method of claim 42 wherein said selective conditions include exposing said transfected mixed cell population to methotrexate.

46. A method of expressing a biologically active molecule in an astrocyte of a subject which method comprises:

obtaining a sample of an astrocyte;

stably inserting DNA encoding a biologically active molecule into DNA of said astrocyte;

transplanting said resulting astrocyte into a subject; and

expressing said biologically active molecule in said astrocyte in said subject.

47. The method of claim 46 wherein said biologically active molecule is selected from the group consisting of a protein, antisense RNA, and a ribozyme.

48. The method of claim 46 wherein said sample of an astrocyte is obtained by removing astrocytes from said subject.

49. The method of claim 46 wherein said stable insertion comprises a non-viral transfection method.

50. The method of claim 46 wherein said expression of said biologically active molecule is under control of a regulatable promoter.

51. The method of claim 50 wherein said regulatable promoter comprises an inducible promoter.

52. The method of claim 50 wherein said regulatable promoter comprises a constitutive promoter.

53. A method of killing astrocytes in a subject, said method comprising:

obtaining a sample of astrocytes;

stably transfecting said astrocytes with a plasmid, said plasmid comprising DNA encoding a poison pill and suitable regulatory elements for controlling expression of said poison pill;

transplanting said transfected astrocytes into a subject; and

exposing said transplanted transfected astrocytes to a selective condition, wherein said suitable regulatory elements cause expression of said

DNA encoding said poison pill only in said transplanted transfected astrocytes present in said subject such that only said transplanted transfected astrocytes present in said subject are killed by said selective condition due to said expression of said DNA encoding said poison pill under control of said astrocyte-specific promoter.

54. The method of claim 53 wherein said poison pill comprises herpse virus thymidine kinase.

55. The method of claim 54 wherein said exposure to a selective condition comprises exposure to a drug selected from the group consisting of acyclovir and gancyclovir.

56. A method of preventing deterioration of phenotypically normal cells in a subject which comprises:

detecting a genotype indicative of an eventual phenotypic abnormality in said normal cells;

treating said normal cell with the genetically modified astrocyte of claim 1 so as to prevent said phenotypic abnormality, said prevention being by expression of said DNA encoding said molecule useful for gene therapy by said genetically modified astrocyte.

57. The method of claim 56 wherein said phenotypic abnormality is indicative of Huntingtons disease.

58. An astrocyte maintained and grown by the method of claim 38.

59. An astrocyte selected by the method of claim 39.

60. A kit for gene therapy comprising the genetically modified astrocyte of claim 1.

61. A kit for gene therapy comprising the genetically modified astrocyte of claim 17.

62. A kit for gene therapy comprising one or more plasmids, said one or more plasmids selected from the group consisting of:

a plasmid comprising DNA encoding a molecule useful for gene therapy and suitable regulatory elements for controlling expression of said molecule useful for gene therapy;

a plasmid comprising DNA encoding a selectable marker and suitable regulatory elements for controlling expression of said selectable marker;

a plasmid comprising DNA encoding a selectable marker and suitable regulatory elements for controlling expression of said selectable marker, and further comprising DNA encoding a poison pill and further suitable regulatory elements for controlling expression of said poison pill; and

a plasmid comprising DNA encoding a poison pill and suitable regulatory elements for controlling expression of said poison pill.

63. The kit of claim 62 further comprising astrocytes to be transfected with said one or more plasmids.

64. A kit for gene therapy comprising:

a plasmid vector having a polylinker site for insertion of DNA encoding a gene of interest;

restriction enzymes for inserting said DNA at said site; and

the astrocyte of claim 58 to be transfected by the plasmid vector after insertion of said DNA into said plasmid vector.